IN THE CLAIMS:

Claims 1-3, and 7-9 have been amended herein. All of the pending claims 1 through 10 are presented below. This listing of claims will replace all prior versions and listings in the application. Please enter these claims as amended.

1. (Currently Amended) An apparatus for introducing deadspace into a breathing circuit, comprising:

a deadspace portion of the breathing circuit located to receive gases exhaled by a patient upon positioning the breathing circuit in communication with an airway of the patient;

a primary expiratory pathway through the breathing circuit;

a flow restrictor positioned along ~~said~~ the primary expiratory pathway downstream from a junction of ~~said~~ the deadspace portion with ~~said~~ the primary expiratory pathway; and

a two-way valve positioned along or at an end of ~~said~~ the deadspace portion, ~~said~~ the two-way valve having:

a first, closed position for causing exhaled gases to flow through ~~said~~ the flow restrictor; and

a second, opened position for causing at least a portion of exhaled gases to flow into ~~said~~ the deadspace portion.

2. (Currently Amended) The apparatus of claim 1, wherein ~~said~~ the deadspace portion comprises at least a volume-adjustable section.

3. (Currently Amended) The apparatus of claim 2, wherein ~~said~~ the volume-adjustable section is length expandable and length contractible.

4. (Original) A method for estimating the partial pressure of carbon dioxide in alveolar blood ($PACO_2$) of an individual, comprising:

calculating a concentration of carbon dioxide in the parallel deadspace (PDS_{CO_2}) of an airway of the individual; and

determining an end tidal partial pressure of carbon dioxide ($etCO_2$) of the individual.

5. (Original) The method of claim 4, further comprising determining a perfusion ratio (r).

6. (Original) The method of claim 5, wherein:

$PACO_2 = [etCO_2 - (1 - r) \times PDS_{CO_2}]/r$.

7. (Currently Amended) The method of claim 4, wherein ~~said~~ calculating comprises calculating ~~said~~ the concentration of carbon dioxide in the parallel deadspace of ~~the~~ an airway of the individual on a breath-by-breath basis.

8. (Currently Amended) The method of claim 4, wherein ~~said~~ calculating comprises:

determining a mixed inspired volume of carbon dioxide ($ViCO_2$) inhaled by the individual;

at least estimating an airway deadspace of the individual;

determining a partial pressure of end tidal carbon dioxide ($etCO_2$) of a previous breath of the individual; and

determining a tidal volume (V_t) of the individual's breathing.

9. (Currently Amended) The method of claim 8, wherein ~~said~~ calculating further comprises:

at least estimating a functional residual capacity (FRC) of alveoli of lungs of the individual.

10. (Original) The method of claim 9, wherein

$$PDS_{CO_2}(n) = \{[FRC/(FRC + V_t)] \times PDS_{CO_2}(n-1)\} + (\{[ViCO_2 + (deadspace \times etCO_2(n-1))]/V_t\} \times [V_t/(V_t + FRC)]),$$

where (n) indicates a parameter for a current breath and (n-1) represents a parameter for an immediately preceding breath.